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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/041,011	01/07/2002	Takeo Oita	1503.66084	2591
7590 Patrick G. Burns, Esq. GREER, BURNS & CRAIN, LTD. Suite 2500 300 South Wacker Dr. Chicago, IL 60606			EXAMINER SHINGLETON, MICHAEL B	
			ART UNIT 2817	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/03/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/041,011	Applicant(s) OITA, TAKEO	
	Examiner Michael B. Shingleton	Art Unit 2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4-8, 11, 12, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art as represented by Figures 1 and 2 of the instant application (AAPA) in view of Horn "Basic Electronics Theory" Fourth edition pp 478-487, Storch US 2,980,872 and Benes et al. US 4,817,430 (Benes).

AAPA discloses a synchronous signal generator having a converter that converts a sine wave from a crystal oscillator 1 into a pulse via the pulse converter 2. AAPA fails to show a filter and particularly a crystal AT-cut filter connected to the input of the pulse converter 2 and is equal to the oscillation frequency f and the center frequency being f_0 . AAPA is also being silent on the use of the AT-cut filter is likewise silent on this filter being such that in the frequency-temperature characteristic indicating a curve having an inflection point around the ambient temperature, a maximum value on the low temperature side, and a minimum value on the high temperature side, and is input into the pulse converter, and output a pulse with jitter reduced as recited in newly presented claim 14.

Horn recognizes that a totally harmonic-free sine wave is difficult to achieve (See page 478) and thus Horn teaches that it is desirable to achieve a harmonic-free sine wave. Horn recognizes the problem with oscillators as producing undesirable harmonics. With Horn recognizing the problem the art when taken together makes obvious the claimed invention for the most common way to eliminate the harmonics is by use of a filter to filter these harmonics out. This is done in a variety of electronic equipment. For example the common receiver has filters to filter out unwanted signals or frequencies. Horn is the glue that holds such a rejection together for it is Horn that teaches harmonics are undesirable in a sine wave generator. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided a crystal filter with a center frequency at f_0 to filter out the harmonics. As to the use of an AT cut crystal this is merely a common crystal filter and the examiner does not see the addition of this type of filter as adding anything patentable to the claims. No showing of unexpected

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results are provided for by applicant and the AT-cut crystal filter would function as intended and that is to filter out the harmonics. The AT-cut crystal would be an art recognized equivalent filter element. Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have replaced the filter element of the invention made obvious above with an AT cut crystal since the examiner take Official Notice of the equivalence of these two filter elements for their use in filtering out undesirable signals or frequencies in the electronic art and the selection of any of these known equivalents to provide a filter function would be within the level of ordinary skill in the art. As to the newly added language of claim 14, this language is very broad in that the claims do not recite what the low temperature side and the high temperature side are. Is the high temperature side the side that begins with the ambient temperature and continues upward. Since these temperature ranges are not well-defined then any temperature range would work and thus given that an AT-cut filter is utilized this AT-cut filter is seen as providing for the function recited because of the AT-cut and given the breadth of the limitation.

In addition to that above, Figure 6 of Benes just confirms this part of the rejection in that Figure 6 of Benes addresses this need to provide for a reduced harmonic component in the output of a signal. Benes provides for a reduced harmonic output by providing a harmonic filter to filter out the at least third harmonic. See column 7, around lines 39-46 of Benes.

Thus when one takes the combination of the references as a whole it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided a bandpass filter centered at the sine wave frequency of AAPA and thereby filter out the harmonics as to achieve a harmonic free (or reduced) signal as taught by the combination of AAPA, Horn and Benes. Again Horn is the glue that provides the motivation to filter out undesirable signals which in the case of a sine wave generator is the harmonics and Benes is merely one example of many that teaches that filters can be used to filter out the undesirable frequencies. It appears that applicant is trying to read the Benes reference is too narrow a light from past and present responses. The bodily incorporation of one reference into another is not the test of what is obvious. The test of whether or not an invention is obvious is what the combined teachings of the references teach.

Benes, Horn and AAPA are all silent on the specific construction of the filter. However, Figure 4 of Storch teaches that one common construction is that of a AT cut crystal.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have replaced the band pass filter of Horn, Benes and AAPA with one that is a crystal type having at least one AT cut crystal because as the Horn, Benes and AAPA references are silent

on the exact structure of the filter one of ordinary skill in the art would have been motivated to use any art-recognized equivalent filter structure including one as taught by Storch.

Note that the synchronous signal generator of AAPA has an oscillation frequency f that is equal to a frequency of a fundamental wave component output from the crystal oscillator as shown in Figure 2 of the instant application.

Note also that because the same reference character "2" is used to describe the pulse converter and because of MPEP 608.02 ("no single reference character is used for two different parts.") these are seen to be identical in structure and thus provides for the "pulse converter is a complementary output driver IC".

Claims 2, 3, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA, Horn, Benes and Storch as applied to claims 1, 4-8, 11, 12, 13 and 14 above; and further in view of Gibilisco "Handbook of Radio and Wireless Technology" pp 195-197.

As to the specifics concerning the same crystal characteristics, the equal cut angle, the same temperature-frequency characteristics that appears in claims 2, 3, 9 and 10, these are all result effective variable used in the design of a filter that are commonly known to those of routine skill in the art. For example Gibilisco clearly recognizes that the design criteria of frequency response is determined "mainly by the thickness of the crystal and the angle at which it is cut." Therefore, the selection of any of these characteristics is merely the selection of the optimum or workable range for the combination made obvious above. Since the selection of the optimum or workable range involves but routine skill in the art, one of ordinary skill in that art at the time the invention was made would have been motivated to make these selections as claimed, i.e. it would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected the same temperature-frequency characteristics, the equal angle cut, etc. as claimed as these are all choices that lie within the skill of one of routine skill in the art. Applicant has not provided any evidence that the selection of these parameters would result in anything unexpected. The examiner is of the belief that one of routine skill would have expected the results obtained by these parameters and the selection of these parameters is merely part of the common engineering practice of trades offs and the selection of optimum values. Trade offs would be that increasing the feedback resistance would limit the bandwidth but would let's say decrease noise. One would select the value to be within acceptable levels which is all the selection of the claimed values is doing. Again applicant has not presented what the non-obvious feature of these selections out be. For example applicant has discovered that a certain resistance range in fact works the opposite as that expected.

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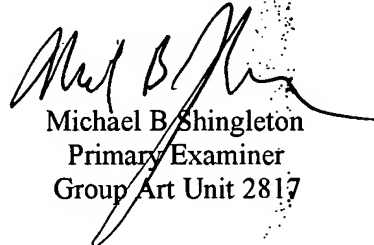
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael B. Shingleton whose telephone number is (571) 272-1770.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal, can be reached on (571)272-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MBS

December 25, 2006



Michael B. Shingleton
Primary Examiner
Group Art Unit 2817